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Southern Pine Beetle Fact Sheet Number 6

WOODPECKERS CAN HELP CONTROL THE SOUTHERN PINE BEETLE

The voracious appetites of four woodpecker species for the southern pine beetle (SPB) play an important role in the control of the destructive insects. Hairy, downy, pileated and red-bellied woodpeckers are the chief predators of the SPB and, throughout the year, are responsible for an average SPB mortality rate ranging from 3.5 percent for eggs, to 63.5 percent for emerging adults.

SPB control through predation by woodpeckers is greatest when the beetle is not overly abundant. Once the SPB reaches epidemic levels, the buffering effect of woodpeckers is reduced. Thus, woodpecker predation can be made more effective by modifying current forest management practices.

The SPB attacks trees initally at about 10 to 15 feet (3 to 4.6 m) and proceeds toward the crown and base. The first sign of woodpecker predation also appears at the intial SPB attack height. The bark-stripped area expands as woodpeckers seek out more SPB's above and below the original point of infestation.

Researchers in Texas and Arkansas found that the SPB has lower survival ability in shortleaf than in loblolly pine. Although many factors play a part, the primary reason seems to be that the thinner bark of the shortleaf pine makes the SPB more vulnerable to the woodpeckers.

Woodpecker feeding or bark scaling also kills off SPB's by indirect means. When the bark is thinned, SPB's in various life stages are exposed to adverse conditions such as excessive heat or low humidity. As a result, larvae that have avoided being on the woodpeckers' luncheon menu may later succumb to heat stress or dehydration. Exposure of the inner wood surface also promotes early establishment of fungi and bacteria, some of which affect SPB survival. In addition, some of the SPB larvae and pupae wriggle free from the bark or fall to the ground in dislodged bark chips.

In an integrated forest pest management program, populations of natural enemies of the pest might be maintained and enhanced. Following are some practices that would favor an increase in woodpeckers:

Limit size of clearcuts.--Large, clearcut tracts are not good woodpecker habitats. Clearcuts of 20 to 40 acres (8 to 16 ha) would have a smaller negative effect of woodpeckers. Additionally, long, narrow clearcuts with an irregular shape might be preferred to square cuts.

Consider site preparation alternatives.--Woodpeckers supplement their insect diet with fruits, nuts and berries of wild plants throughout the year, but primarily in the summer and fall. Chopping and using K-G blades to prepare pine seedling sites decimates the plants that produce these fruits.

Manage for snags.--Standing dead or live trees remaining in clearcuts after site preparation should not be removed. They are valuable to woodpeckers as foraging sites and potential nest trees. If it is necessary to prevent competition with growing seedlings, deciduous trees should be killed but left standing. Vary the number and size of snags to maintain woodpecker populations at beneficial levels. Woodpeckers depend on trees with fungal heartrots for nest sites. Removing trees with holes, dead branches, or some other sign of decay will reduce potential nesting sites.

Lengthen timber rotation age.--Short rotation may reduce the woodpecker population. A rotation age that provides the right size trees might be considered if downy and hairy woodpeckers are to be favored. These trees would be of a suitable size for both nesting and foraging. The rotation will also allow ample time for the fungi to create suitable nest site conditions in some trees. Tree species, sites, and management plans must be considered in the rotation scheme.

Leave some mature forest.--Even small patches of mature forest provide a valuable habitat for woodpeckers. If 1/4 acre were left from each 5 acres (.1 of each 2 ha) cut, it would help maintain the small woodpecker species during the early stages of regeneration.

Cutting beetle-killed trees.--A few beetle-killed trees should be left standing even after the beetles are gone because the trees are excellent nesting sites for woodpeckers.

Acknowledgment

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HABITATS FAVORABLE TO WOODPECKERS IN THE SOUTH

Woodpecker species	Habitat	Basal area (ft^2/ac)[1]	Number of trees/ac[1]	Nest tree Height (feet)	Nest trees d.b.h. (inches)	Minimum acres of territory
Hairy	Live and nest in pure pine to pine hardwood; common along stream banks and in lowland areas principally occupied by hardwoods.	79-86	48-394	30-45	12	30
Downy	Stands on dry upland sites, although occasionally found in creek and stream areas.	52-74	46-474	15-25	8	10
Pileated	Favor lowland wet areas, also upland mixed pine and hardwood.	101-138	56-455	35-45	22	175-200+
Red-bellied	Dense stands with mast producing trees	61-72	183-314	40-60	18	20-30

[1]Stems greater than 2.5 inches (76 cm); includes nesting and foraging habitat.